

### Rotary cut tool

The invention refers to a rotary cutting tool with a round shank, in particular thread taps.

Under a rotary cut tool a machine cutting tool is to be understood. It acts thereby around twist drill, drilling knife with owner, thread tap, countersink, reamers and drills.

A such cut tool possesses a square head at the free shaft end for setting an owner such as thread dies, with which the cut tool can be sewed by hand. An appropriate tool for clamping into a machine usually possesses a cylindrical or cone shank.

With the use a such tool can be overloaded and broken off within the cut range, so that the location of fracture lies deeply in the workpiece. Very frequently this case arises when thread boring with a hand tap, is it that the core hole diameter is blunt too small bored, the thread tap inclined set or the thread taps, Even when thread boring with the machine such errors can occur.

Removing of the been stuck part is difficult and time-consuming, and in many cases a damage at the workpiece stays or the workpiece is scrap iron by an appropriate operation.

The task of the invention consists of improving the cutting tool so that a tool failure within the cut range is avoided and the been stuck part be easily removed can.

The task is solved according to invention by the measures specified in the principal claim. Training further of the invention are described in the lower claims.

For the solution of the task two measures are suggested. First it must be prevented that the tool within the cut range breaks, For this on the length of the shank a break section is arranged, which is in such a manner trained that during an excess of the permissible load of the tool a break takes place accurately at the break section. The break section can be trained as circulating notch in the shank, as paragraph as the reduction of the shaft diameter knife or as parting with a radius foermigen reason.

The break section is arranged in a place of the shank that with a break of the tool, at which been stuck part of the tool still another piece of the shank from the workpiece stands out.

This remaining piece of the shank is designed as the further measure at least at a

part of its length as angular plain length, for example than square, so that a gutter beginning for a release tool is present. The advantage of the invention consists of the fact that taking the been stuck remainder part out without damage of the workpiece can take place, and/or, a complete loss of the workpiece is avoided.

Preferably the break section is appropriate at the heading of the angular plain length, so that a break of the tool takes place accurately at the head of the angular plain length. If the angular plain length possesses a square with the wrench width of the square of the lost head, the original turning tool can be used, for example thread dies for unscrewing the remaining piece. Usually the cut part of the tool, for example with a thread tap intact, remains so that with these that further training of the invention the tool can be reused now with a shorter shank.

In the following a remark example of the invention is more near described on the basis the design

Show:

FIG 1 a thread tap in the main view,  
FIG 2 a cut by the shank of the thread of drill along the line CD in FIG 1,  
FIG 3 a cut by the shank of the thread of drill along the line OFF in FIG 1.

The remark example of the invention a thread tapS is the basis, which consists of a out part 6 and a round shank 7, which exhibit a square 8 at the head of the shank?. Such thread taps are for example standardized according to DIN 351, 352, 371 or 376

Thread tap of this kind gives it in a 3-Satz to execution with a Vorsch cutter, a plug tap and a bottoming tap, or as 2-sentence execution with a Vorsch cutter and a bottoming tap, or as single execution. While the 3-Saix execution is designed as hand taps, the 2-sentence execution and the single execution is usually used as machine thread taps. All types specified here can be implemented with the characteristics according to invention

With the thread tap S represented in FIG lit can act around a bottoming tap out of a 3~ sentence execution. As the FIG I shows, the cut part possesses 6 four straight chip grooves  
9. These chip grooves 9 run out ri an end piece 10 of the shank I. A part of this end piece  
10 is implemented as angular plain length 11, here as square 12 trained. This square 12 has the same wrench width as the square 8 at the head of the shank 7

The square 12 has the purpose, a tool such as pliers to set thin spanners or thread dies in order to unscrew with a break of the thread tap 5 the part which was stuck

in the workpiece. In order to reach, it must be prevented that the break of the thread tap S with overloading not in the cut part 6 (threaded piece) takes place itself also not at the end piece 10, but at the plain length 13 following to the end piece 10.

This is reached by the break section 14 between the square 12 and the square 8 of the plain length 13. The break section 14 is designed as cross-section contraction of the shank 7 and leads to the torsion break of the shank 7, before the cut part of 6 (threaded piece) exceeded its load limit. In the remark example the break section 14 implemented as radiusform parting 15 is and attached at the heading of the square 12 directly. With the break of the shank? the square 12 remains and it can a thread die be set. If the break section 14 in another place of the shank 7 is, from the shank 7 at the square still another piece remains 12. In this case the been stuck cut part of 6 (threaded piece) with pliers or a thin spanner is to be removed.